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ABSTRACT

Both external accountability and the necessities for coherent internal priorities have forced a rapid increase of attention to the outputs of institutions of higher education. This paper offers a purview of some of the areas which need to be considered in conceptualizing output measures for education. These measures are important for the planning and management of institutions which increasingly find themselves in financial difficulty and under pressure to induce cost efficiency. The central question posed is: what difference does an exposure to higher education make in the life patterns of those who get it? Education is a transformational process, both as to the social benefit and the private benefit conferred, and it is argued herein that its transformational character may be even greater on the social benefit side. Better measures are needed to show the nature and extent of this transformation. Some of the indices, available to administrators that will help determine these measures are discussed. The number of degrees produced by program and level is one measure of instructional output. Another is longitudinal data concerning the jobs and activities of former students to assess what the students have really gained in educational output. Finally, quality measures, based on something more concrete than guesswork and reputation are needed to show with some precision and accuracy the worth of an education. (Author)

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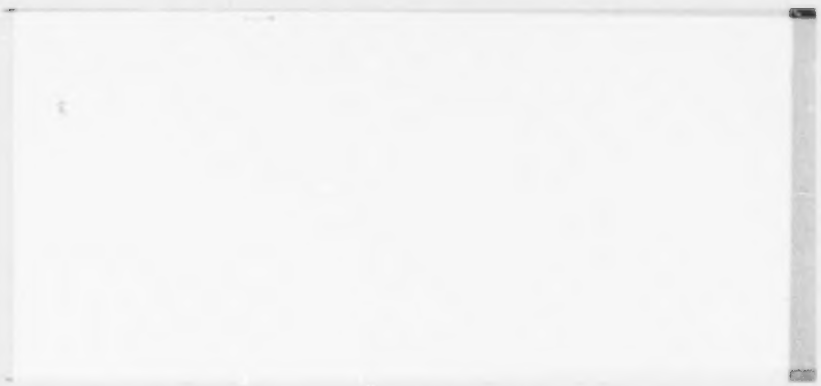

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ABSTRACT

THINKING ABOUT THE OUTPUTS OF HIGHER EDUCATION
Paper P-5, F.E. Balderston

Both external accountability and the necessities for coherent internal priorities have forced a rapid increase of attention to the outputs of institutions of higher education. This paper, prepared as an address to the National Research Seminar on the Outputs of Higher Education, May 3, 1970, offers a purview of some of the areas which need to be considered in conceptualizing output measures for education. These measures are important for the planning and management of institutions which increasingly find themselves in financial difficulty and under pressure to induce cost efficiency. The central question posed is: what difference does an exposure to higher education make in the life patterns of those who get it? Education is a transformational process, both as to the social benefit and the private benefit conferred, and it is argued herein that its transformational character may be even greater on the social benefit side. Better measures are needed to show the nature and extent of this transformation. Some of the indices, which are available to administrators and which will help determine these measures, are discussed. The number of degrees produced, by program and level, is one measure of instructional output. Another is longitudinal data concerning the jobs and activities of former students to assess what the students have really gained in educational output. Finally, quality measures, based on something more concrete than guesswork and reputation, are needed to show with some precision and accuracy the worth of an education.

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THINKING ABOUT THE OUTPUTS OF HIGHER EDUCATION

F. E. Balderston

Paper P-5

May 1970

THINKING ABOUT THE OUTPUTS OF HIGHER EDUCATION *

As we consider concepts and measures (and perhaps proxy-measures) for the outputs of higher education, we will be dealing with social questions of almost classical majesty. What is the value of basic science and the value of the contribution to society of the scientists? What is the value of the learned person not only in the sciences but in the professions and the arts, both to himself and to society? And even, what is the value of learning about values in the setting of formal education?

These are, indeed, issues of near-cosmic proportions. But we will have to skirt some of them, and others we will have to work on in the spirit of prosaic, detailed analysis rather than that of the great social critics and philosophers of education in the past: Bacon, Jefferson and Franklin, Cardinal Newman, Lowell and Eliot, John Dewey; and in our own time John Gardner and Clark Kerr.

In a way, it is ironical that this conference takes place in 1970, a century after the great expansion of higher education began in America, or even that it occurs in 1970 instead of 1945, when the last and biggest increment of this expansion began to get under way. But now is the time when the bills are arriving and appearing oppressive -- to the public decision-makers, to those who seek to sustain higher education in the private sector, and, not least, to the students! And now is the time when a wide variety of new analytical and planning techniques are

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* Address to the National Research Training Seminar on the Outputs of Higher Education, May 3, 1970.

being brought to bear in a professional way on the problems of managing individual colleges and universities and managing higher education as a series of regional systems and as a national system.

All of us have reason to be concerned about the costs and resource requirements of higher education. Much of our work, in fact, has to do with efforts to improve the methods of accounting and information assembly which will permit better description and analysis of these costs -- costs of higher education as a sector of activity in the nation, from the point of view of institutional costs and the costing of particular programs within institutions, and from the point of view of the cost of education as seen by the individual student. But we have bumped hard into the question of output and its measurement because, among other things, we are seeking now to link the resources used to the results achieved -- in other words, to link inputs with outputs. It turns out that in the long history of concern about the processes and activities of education, we have achieved only a very imperfect grasp of the nature of its results. We are having to tackle the problems of output definition and measurement under forced draft, for higher education has come to the front of public attention both as a major social problem and as a major contributor to social change and economic development. Higher education is seen as perhaps the most significant gateway to individual mobility and place in our society. It is seen as demanding over the next few decades a sharply increasing share of gross national product. It is seen as demanding resources under conditions which are at the present time not satisfactory to the providers of these resources at the state, the national, or the private level. The job we have to do is urgent, important and controversial. If we had time, we might do well to symphathize with ourselves for taking it on.

The papers and discussions scheduled for this conference are intended to cover eight individual topics and the linkages between them: four clienteles for output are seen (public, private, faculty, and students) and four major functional areas of educational activity are to be covered (undergraduate education, graduate education, research, and social involvement). I'm sure that we will benefit by this configuration of probes into the perplexing question of higher education outputs. In effect, what we are talking about is the need for operational definition and the means for measuring the goals of objectives of this system or series of systems of social activity.

It must be said at the beginning that higher education will go on, in some fashion, whether or not we and others like us succeed in obtaining improved definition of outputs. After all, it has survived for a long time without the kind of effort toward developing a rationale that we are undertaking now. But I think we can reasonably ask ourselves who will be interested in the outcome of our efforts to define and measure outputs? The clients for our efforts appear to be many, and the kinds of answers they may be seeking will not necessarily be obtained by a single mode of inquiry. First, there are the national and state public policy makers and resource allocators who are concerned with major commitments of public funds to the various activities carried on by institutions of higher education. Second, there are the trustees, presidents, academic decision-makers generally and faculty and students in particular of the individual colleges and universities. They have urgent demands for information pertinent to the decisions they face, and they have fears that the solutions to output measurement problems which we may propose may profoundly affect their institutions.

Most generally, there are the representatives of various public and private clienteles who feel, mostly rightly but occasionally wrongly, that higher education has an impact on them: employers of the trained talent which comes from colleges and universities; users of basic and applied research findings which flow from scholarly activity; participants in the culture and the value controversies of society, who inevitably link themselves with the culture-creating-and-sustaining activities of our colleges and universities; and citizens at large who, as parents, taxpayers and critics, display a kind of fascinated ambivalence about the importance and also the hazard of higher education in these troubled times.

Perhaps the broadest questions relating to the outputs of higher education revolve around the distinctions between the social benefits of higher education and the private benefits accruing to business firms and to the individual student and his immediate family. Throughout the discussions at this conference, it can be anticipated that the problem of distinguishing between social payoff or gain and private payoff or gain will be troubling. So far as instructional outputs are concerned, should we regard them as having to do only with the gain in money income or at least in individual utility for the student, or must we also take into account a wide variety of implications for the broader society? When an individual scholar or an organization in a college or university produces new knowledge or creative insight or engages in public service, who are the clients for this, how do we assess the direct benefits to them, do they pay for the work that is done, and what are the secondary impacts, if any?

I want to make a few comments about the question of social payoff in research and public service before I move to some discussion of the

issue of social versus private benefit to the student.

We generally have a presumption that a new fundamental research result in the sciences, a new musical composition, or a feat of historical or critical scholarship has cosmopolitan consequences. The more fundamental it is, the more cosmopolitan, almost by definition. This would seem to argue that the public investment in basic research has to be made by the broadest jurisdiction available -- the national government, a philanthropic organization operating in the national interest, or even a body representative of supra-national concerns. Yet we observe that the appropriate jurisdiction for making the decision to invest in the creation of new basic knowledge is often unavailable -- there is not a potent and well-funded world organization for the support of basic research in mathematics, to use just one example. What has to happen is that decision makers whose sources of support for research activity are much more localized than the incidence of cosmopolitan benefit is must make these investments in new basic knowledge. For a large country, much of the cosmopolitan benefit can be captured for the nation as a whole, and this is part of the rationale for the existence of national programs for the support of basic research, as in the case most prominently of the National Science Foundation. But even this jurisdiction has an inadequate level of funding for the work that basic researchers may seek to do, and we observe that out of their own precious and limited resources, private universities function to support basic work, and public institutions drawing support quite substantially from state government also support a lot of basic research. My own belief is that this is indeed appropriate, even though the cosmopolitan gains will eventually diffuse over the world of civilized men. But the rationale

that I would offer comes in two parts, both of which are difficult to substantiate analytically and still more difficult to make thoroughly plausible to the man in the street. The first element of this rationale is that the rate of diffusion of new basic knowledge is not instantaneous, and that a locality or region or individual nation takes gains from leadership in basic research which are, while temporary, of great importance to the vitality and progressiveness of thought and of the applications of knowledge in the region or nation. The second part of the rationale is that in the long run, the very capability to offer serious education to young people is dependent on their involvement, and that of their teachers, in a combined research and instructional process in which the linkages between the two produce a necessity for doing the one in order effectively to do the other. As to the rate of diffusion of new knowledge, I retain faith in a daring and only partly proved hypothesis: namely, that the quality of life and the rate of economic and social development in a region or nation is deeply connected to its willingness to support and honor the creative processes which result in new fundamental knowledge. This may not be true, as a matter of priority, for nations which are in the early stages of modernization, but it seems to me to be clearly true of the United States, of the advanced nations of Europe, and of Japan. I would even claim that the advanced regions within the United States owe much of their eminence to the lead which a critical mass of scholarly productivity provides. As yet we do not have a fully developed theory which will demonstrate the differential rates of economic and social development that can be achieved under circumstances of varying rates of support to the scholarly process, and our dilemma is that until we have such a demonstrated theory we must nevertheless try to put the case for the support of fundamental work as

a matter of faith, or we must reconcile ourselves to a very much more prosaic sub-optimizing strategy which would reduce the priority to basic research.

This problem of regional development rates needs further work in order to prove or disprove the regional hypothesis and in order to give a basis for placing the locus of resource allocation decisions as nearly as possible in tandem with the locus of broad social benefit. The regional vs. national hypothesis is of special significance in the United States because the states have traditionally supplied a very large part of the public money for higher education -- and this, in the face of substantial rates of migration of people and ideas.

The differences between social payoff and private payoff in the instructional process are of even greater conceptual importance, but may be somewhat easier to deal with. Here again, I tend to be a broad constructionist and argue that social benefits very frequently exceed private ones and that educational strategies should be based on this approach. At the broadest level of social comment, I would simply point out that there are two nations of the world which have consistently followed a very broad strategy of investment in the education of their people: the United States of America and the USSR. They have done so under very different ideological banners and very different forms of government. It seems to me that, as nations, they have both been able to capture the great bulk of whatever excesses of social over private benefit existed because their rates of out-migration of persons have been low relative to their domestic populations, and, second, the accession to eminence and further, the accumulation of power by these two countries in the twentieth century has been impressive and even terrifying to other countries. I believe that the broad strategy has paid off.

Another view is that there is no excess of social over private benefit. The student as private beneficiary should therefore pay full cost of his education, except for smoothing of access to loan capital and possible provision of subsidy to those of low income. It seems to me that had the theories of Milton Friedman and other proponents of this alternative view been controlling in the United States for the past century, we would have had a great deal less total investment in human capital than there has been; and to the extent this investment did occur, it would have resulted in a great deal of reinforcement, from generation to generation, of entrenched economic and social advantage. At the risk of sounding provocative in defense of the presence of social benefits exceeding private benefits from the investment in human beings, I would say that the Friedmanites may be guilty of a form of hard-nosed myopia. The phrase sounds like an agnewism, so I will retract it!

Professor Howard R. Bowen, whose writings on the economics of higher education are familiar to many of you, has written a paper recently which I hope will soon be generally available. It is called "Finance and the Aims of American Higher Education" and in it Bowen has an appendix listing what he feels are important types of social benefits (as distinct from private benefits) of higher education. Bowen lists an even dozen types of social benefit from instruction, and he also points to social benefits from the colleges and universities as centers of research and scholarship; from their presence as pools of versatile talent; and from their activities as patrons of the arts.

It is one thing for us to make these claims of the social benefits to instruction, but quite another to find good measures for them. If Bowen's list is nearly correct about the conceptual elements to consider,

we will need information about the post-graduation activities of former students so that we can construct indices of civic participation, cultural interest, choice of occupations having intrinsic social value but not high market income, and other social factors. The important issue here is: what difference does an exposure to higher education make in the life patterns of those who get it? Education is a transformational process, both as to the social benefit and the private benefit conferred, but I am inclined to think that its transformational character may be even greater on the social benefit side.

The student's passage through a particular educational program can be viewed in three ways at the time he completes it. He meets a standard of competence or certification; he may be rated, among those who pass, in relative performance ("number one in the class"); and his final performance can be gauged in relation to his level of capability at the time he began. Let me make a few comments about each of these.

For many purposes, the fact of earning a B.A. degree of a Master's degree may be more important to the student making his way in American society than the reputation of the institution where he earned it, or how well he did relative to his classmates, or what he actually learned. The certification effect seems to have real importance, both to the student's self-esteem and to his early opportunities for job placement. For an institution, the number of earned degrees produced in each type and level of program is an important measure of its achievement.

What significance has the relative measure, as in the class ranking, or the award of Phi Beta Kappa? Based on the internal competition among classmates at a given institution or in a given program it is a competitive signal both to those rated high and those rated low, but it is also very easy for the student, the institution, and the world at large

to misinterpret. Employers are often very eager to obtain information about relative standing, but it would perhaps be a more acceptable measure if made against a larger population than the college class in which the student happened to find himself, and in the context of internal, antagonistic competition the notion of exact relative standing has come under attack. The current academic climate condemns the more egregious abuses of competitive, grade-getting behavior.

The third way of viewing successful completion of an academic program is in many ways the most sophisticated and the most interesting: what has the student attained in relation to his capability at the starting point. This concept approximates educational value-added. It may be useful within an institution, particularly if there is reasonable assurance that the admission data and the evidence of the student's performance in the institution are reliable indicators. But it would be even more useful if there are external referants for both -- e.g., C.E.E.B. achievement scores at the time of freshman admission and the scores on the Graduate Record Examination at the time of graduation from college. According to this view, the student and the institution together have accomplished more education if the value-added is great than if it is small. According to this view, an educational process which moved a student from the lowest quartile of high-school achievement to the second quartile of college-graduate achievement would be accomplishing something tremendous, whereas the college which accepted students only from the top decile of high school achievement and delivered them into the top decile of college achievement would be doing relatively much less.

As we all know, status and reputation among institutions of

higher education are mostly based upon absolute standards, or at least upon the horse-back perception of what they are. If we can bring greater attention to educational value-added, we will accord more credit to the institutions and programs where substantial educational gain occurs.

The number of degrees produced, by program and level, then, provides one measure of the amount of instructional output, by an institution or a system, and I have suggested as another measure the amount of educational value-added obtained by each surviving student. This still does not deal with two problems for which current measures could be obtained: the amount of attrition, that is, the proportion of students who do not attain a degree, and the interpretation of what they gain from educational exposure even though they do not "succeed"; and the current measurement of the quality of education received. The eventual college drop-out has at least had one thing delivered to him which our society values greatly: the opportunity to try. In fact, we may very well find that as college-going opportunity is increasingly universalized, attrition rates will increase, and we will tolerate this to the extent that the opportunity to try is valued in relation to the cost of providing the educational exposure. From two other points of view, however, we have reason to be very concerned about hte phenomenon of drop-out. Drop-out usually signals failure to the student, and it may exact a heavy psychic cost from him. And the investment cost of providing the educational exposure is largely unrequited, we have reason to believe, if the student does not persist to the degree. More research is needed on this question, but the fragmentary evidence that I have seen seems to indicate that in terms of market return, at least, the drop-out student has a later income pattern that is not very different from what it would have been if he had not attended college at all.

Certainly a major area of efficiency gain available to American higher education (as well as to elementary and secondary education, where there is an immediate social crisis over the issue) would be to increase the achievement and success rates of students who presently fail to complete programs. Yet educational budgeting in both private and public institutions is still very largely based on enrollment flow and not on the net output of those who achieve well. More knowledge of the reasons for drop-out and more attention to the design of educational programs to produce successful achievement would very probably pay big dividends. It is hard to interpret drop-out by students who could succeed in conventional terms, but who are repelled by conventional success and "making it", or prefer the Movement, or are in quest of a different life. We do not yet know how to confer dignity on downward mobility. I might add that our universities could very well have produced Pontius Pilate and the Scribes and the PHarisees. But what would they have done with Jesus of Nazareth?

Quality measures are also very much needed now, and they would become still more important if new emphasis were placed upon budgeting in accordance with the net output of degrees attained. (Many academic people express the fear that if budgeting were done according to degree output, success rates would be improved simply by reducing the passing standard).

There is great cynicism about the educators' alleged preoccupation with educational quality. One prominent educational spokesman in California government put it this way: "Quality, Shmality!", he said. He implied that whenever really embarrassing questions were raised about the amount of resources it took to do the educational job, or about teaching loads, or a host of other institutional practices, educators would defend the

status quo by arguing that their practices were necessary in order to maintain educational quality. I have no sympathy for this man's view or the way he expressed it, but I do think that it is very urgent business indeed to find measures of the quality as well as the quantity of education.

At the present time, great reliance is placed on the status rankings and indicators of institutional reputation which are formed in people's minds from very fragmentary folk-lore impressions. Surely more can be done. At the crudest level, every graduating senior from every accredited institution could be expected to take the Graduate Record Examination or one of the analogous professional school examinations. By analyzing the resulting body of data, it would be possible to look both at the means and the distributions of each institution's graduates in relation to the whole population of graduates.

Finer measures of quality are undoubtedly needed. At some institutions, the administration seeks the judgment of outside visiting committees in each discipline so that something more will be available to them than the special-pleading claims of their own departmental faculties.

Longitudinal data concerning the jobs and activities of former students (both degree-winners and drop-outs) after they have left an institution would be very helpful to it in assessing what the students have really gained in educational output. There are bound to be serious arguments about values in the interpretation of such information, but it is needed both for improved institutional management and in the interest of accountability. Questions of the "whole man" and of character dropped out of focus for a time in favor of attention to the graduate's formal academic prowess. But events and our national agony

should cause us to reinstate these issues. Three other value-loaded issues are bound to come up. One is the interpretation of the value to be placed on the education of women who later spend a major part of their adult lives in child-rearing rather than in the labor force. Is the educated woman who does not work simply a consumption good for her husband -- this was the assertion of one economist I talked with, who saw no problem in requiring the husband to repay loans which had been used to finance his wife's education. I found this male chauvinism appalling.

The second issue that is bound to arise concerns the later migration of educated persons from the states where their education had been (in part) financed from state tax moneys. What interpretation are state authorities going to make of longitudinal information which discloses that a portion of the former student population has migrated elsewhere. Is the state cost of their education an unrequited investment of the state in question?

Finally, we must point to the deep collision of values between those who adopt conventional interpretations of the worth of education as preparation for highly valued occupations and those who argue that this is simply supporting a social system that needs trained and docile manpower, whereas the real point of education should be to prepare young people to reshape society. I have no easy answer, but I will forecast that this argument will continue for some time.

I want to comment, in conclusion, about the importance of output measures for the planning and management of the individual college or university. Much of what I have said bears on ways to view the individual student as an embodiment of educational output, but measures of the performance of populations and sub-populations of students who come out of particular academic programs can be interpreted as indicators of

institutional performance. These indicators need to be joined much more firmly than they have been with decisions about priorities and resources.

Each degree program, each academic department, each research institute can be thought of as a contributor to the strength (or weakness) of the institution. Many of us are working on the slippery problems of costing. But costs cannot be gauged against too immediate a set of measures of student performance (or faculty research performance). It usually takes a great deal of time to build up a faculty cadre for an effective academic program, and still more time for that program to achieve reputation, and still more time for resources to be withdrawn from a program that becomes obsolete or useless. What does seem to be important, especially in the formation and support of graduate programs, is to assess from the beginning what it will take to produce a critical mass of faculty and other resources that will be necessary to mount an educationally viable and economically effective program, and to move toward this target level rapidly -- until it is reached, costs are very high in relation to results. From the institutional stand-point, critical mass is also important because it provides a means of delivering institutionally-recognizable outputs, rather than outputs (in teaching or in research) which are attributable solely to individual students or faculty. I see no evidence that the decade of the 1970's will be very different for American higher education than the first year of the decade has been. If this is a valid presumption, the requirements for efficiency improvement and for courageous selectivity in the allocation of resources to competing programs will lay heavy upon college and university administrators and faculty. Both external accountability and the necessities for coherent internal priorities will force a rapid increase of attention to the outputs of every institution.

Thank you.